IN THE CLAIMS

Claims 1-30 (cancelled)

31. (Currently Amended) An adaptive controller for controlling a loop of an amplifier system, comprising:

a receiver for receiving a pilot signal; and

a processor coupled to said receiver and programmed with a loop control algorithm to provide as an output phase adjuster settings based on the received pilot signal, the loop control algorithm comprising a cost function having a floor value and a penalty associated with the direction of adjustment of the settings amongst settings with measured cost equal to or below the floor value.

32. (Original) A method for controlling an amplifier system having a control loop comprising a control loop input, a first signal path, a second signal path, and a control loop output, at least one of said first and second signal path including an amplifier, said method comprising:

detecting a pilot signal at the control loop output;

comparing the detected pilot signal to a floor value;

if the pilot signal is greater than said floor value setting a loop control cost function equal to the pilot signal;

if the pilot signal is less than said floor value, setting the loop control cost function equal to the floor value;

determining the adjustment direction of the loop control;

if the loop control is adjusting in an undesired direction adding a penalty to the floor value to derive a new cost function; and

adjusting the phase of the second signal path so as to minimize the value of the cost function.

33. (Currently Amended) A method of controlling a control loop of an amplifier system, said control loop having a first signal path and a second signal path, an input and an output, said first and second signal paths having a <u>substantial</u> delay mismatch, said method comprising:

detecting a pilot signal <u>having a single pilot frequency</u> at said output;

adjusting the phase of at least one of said first and second <u>delay mismatched</u> signal paths; and

controlling said adjusting so that said detected pilot signal is at a <u>stable steady state</u> level offset from a minimum value.

34.   (Currently Amended) A method of controlling distortion cancellation of an RF signal in a control loop of an amplifier system, said control loop having a first signal path and a second signal path, an input and an output, said first and second signal paths having a delay mismatch, said method comprising:

injecting a pilot tone into said RF signal, said pilot tone having a <u>single pilot</u> frequency offset from the center frequency of the RF signal bandwidth;

detecting the pilot signal at said output; and

controlling the phase of at least one of said first and second signal paths of the ~~second~~ control loop to stabilize ~~second~~ control loop distortion cancellation at a frequency offset from the pilot signal frequency and generally symmetrical about the center of the RF signal bandwidth.

3